CHAPTER 2

DESCRIPTION OF THE SOUTH FORK HOLSTON RIVER WATERSHED

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2.1. BACKGROUND. The Holston River and Watershed are named in honor of Stephen Holston. Holston, an early explorer and surveyor with The Expedition of 1748, was the first settler to explore the Holston River system, including South Fork of the Holston River.

The South Fork Holston River watershed consists of lowlands, rolling valleys, and slopes and hilly areas that are dominated by shale materials. The well-drained soilds of the watershed are often slightly acid to neutral. The low-lying region contains roughly parallel ridges and valleys in a variety of geologic materials. Springs and caves are relatively numerous.

This Chapter describes the location and characteristics of the South Fork Holston River Watershed.

2.2. DESCRIPTION OF THE WATERSHED.

2.2.A. General Location. Located in East Tennessee, the Tennessee portion of South Fork Holston River Watershed includes parts of Carter, Greene, Hawkins, Johnson, Sullivan, and Washington Counties. The Group 2 portion of the watershed just includes parts of Carter, Johnson, and Sullivan Counties.

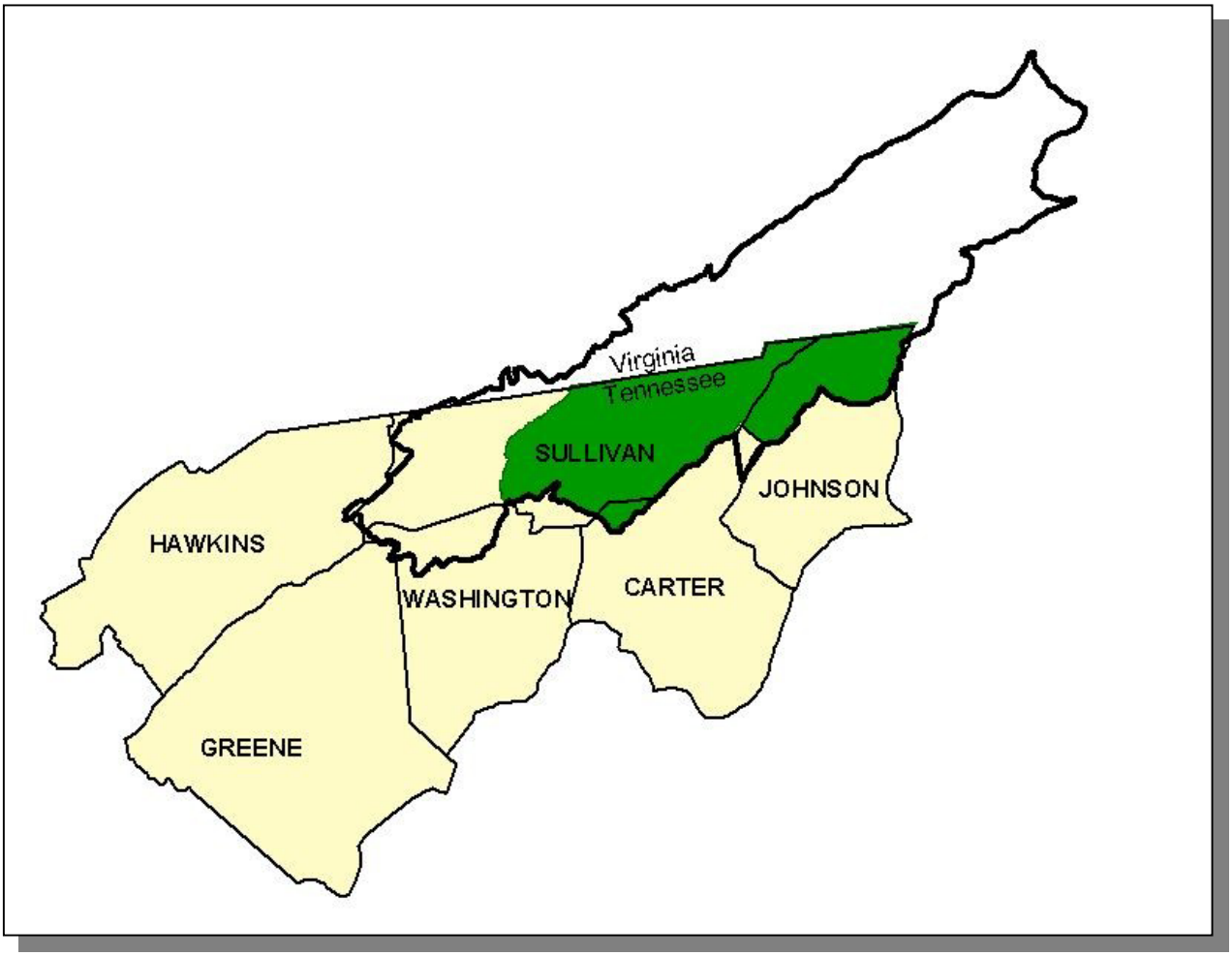

Figure 2-1. General Location of the South Fork Holston River Watershed. *The green portion represents the Group 2 portion of the watershed.*

COUNTY	% OF WATERSHED IN EACH COUNTY
Sullivan	70.9
Johnson	26.6
Carter	2.5

Table 2-1. The Group 2 Portion of the Tennessee Portion of the South Fork Holston River Watershed Includes Parts of Three East Tennessee Counties.

2.2.B. Population Density Centers. One interstate and four state highways serve the major communities in the Group 2 portion of the Tennessee portion of the South Fork Holston River Watershed.

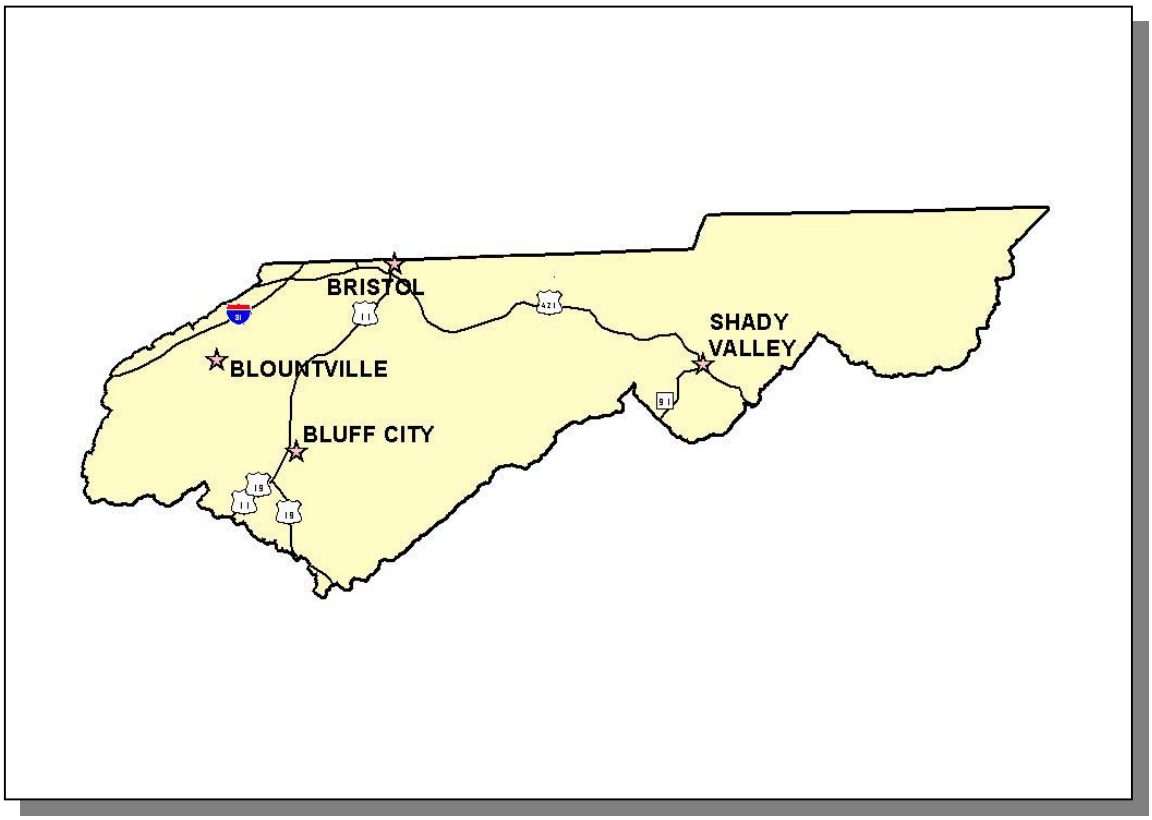

Figure 2-2. Municipalities and Roads in the Group 2 Portion of the Tennessee Portion of the South Fork Holston River Watershed.

MUNICIPALITY	POPULATION	COUNTY
Bluff City	1,403	Sullivan
Bristol	24,564	Sullivan

Table 2-2. Municipalities in the Group 2 Portion of the Tennessee Portion of the South Fork Holston River Watershed. *Population based on 2000 census (Tennessee Blue Book).*

2.3. GENERAL HYDROLOGIC DESCRIPTION.

2.3.A. Hydrology. The South Fork Holston River Watershed, designated 06010102 by the USGS, drains 551 square miles in Tennessee and empties to the Holston River.

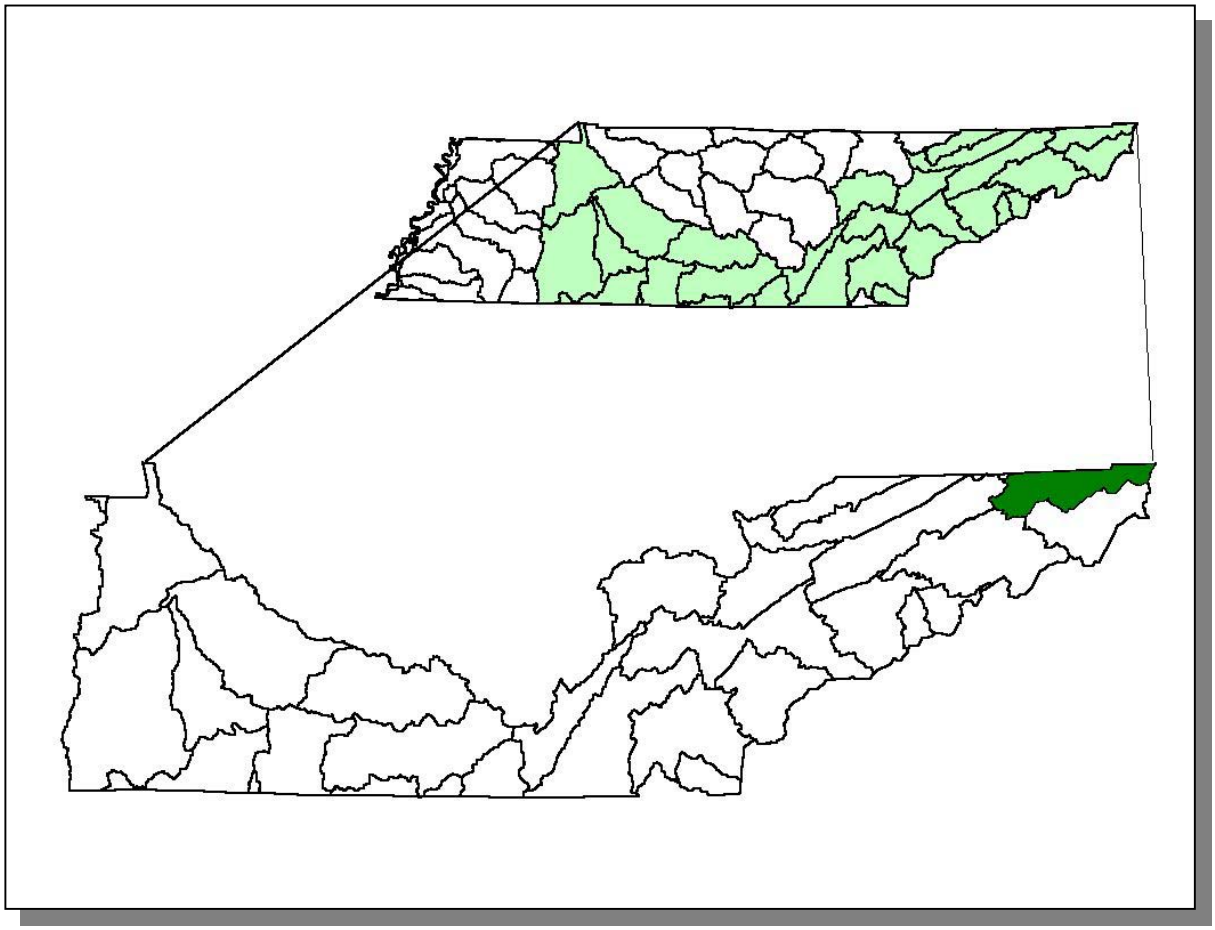

Figure 2-3. The South Fork Holston River Watershed is Part of the Tennessee River Basin.

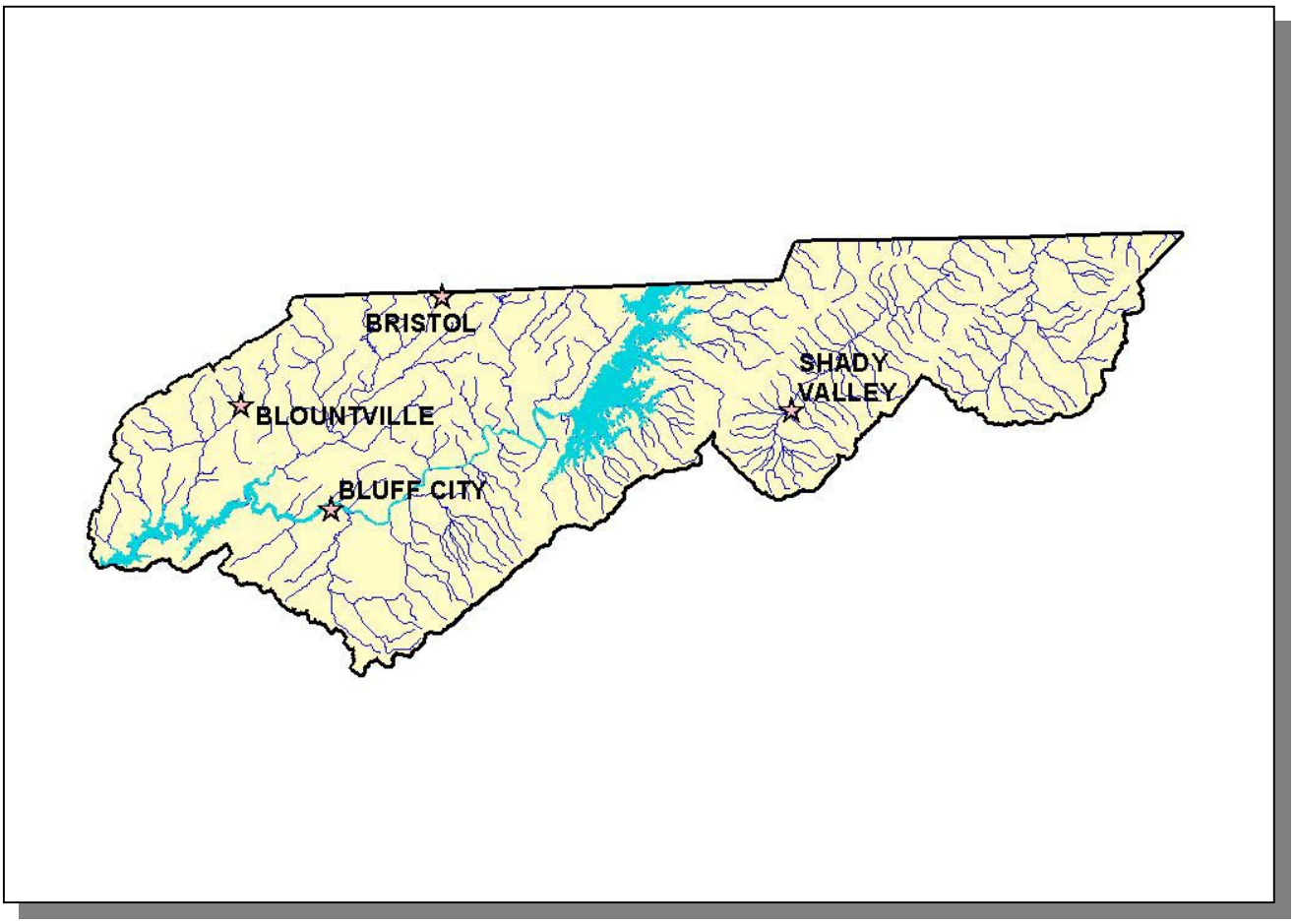

Figure 2-4. Hydrology in the Group 2 Portion of the Tennessee Portion of the South Fork Holston River Watershed. *There are 1,880 stream miles recorded in River Reach File 3 in the South Fork Holston River Watershed (838 miles in the Tennessee portion and 542 in the Group 2 portion of the Tennessee portion), and 12,884 lake acres in the Tennessee portion of the South Fork Holston River Watershed (11,977 lake acres in the Group 2 portion). Location of the South Fork Holston River and impoundments, and the locations of Blountville, Bluff City, Bristol, and Shady Valley are shown for reference.*

2.3.B. Dams. There are 4 dams inventoried by TDEC Division of Water Supply in the Group 2 portion of the Tennessee portion of the South Fork Holston River Watershed. These dams either retain 30 acre-feet of water or have structures at least 20 feet high.

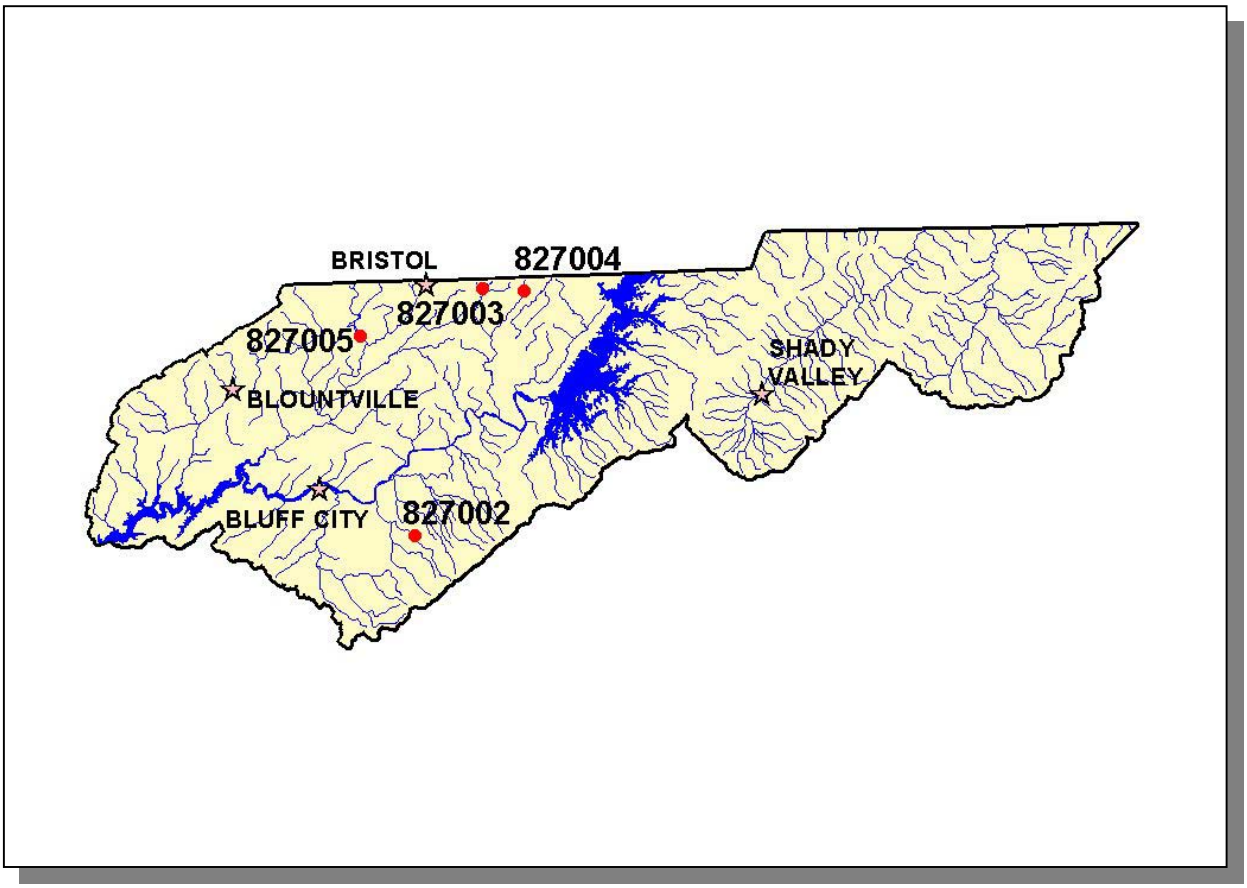

Figure 2-5. Location of Inventoried Dams in the Group 2 portion of the Tennessee Portion of the South Fork Holston River Watershed. *Locations of Blountville, Bluff City, Bristol, and Shady Valley are shown for reference. More information is provided in SF Holston-Appendix II and on the TDEC homepage at: http://gwidc.gwi.memphis.edu/website/dams/viewer.htm*

2.4. LAND USE. Land Use/Land Cover information was provided by EPA Region 4 and was interpreted from 1992 Multi-Resolution Land Cover (MRLC) satellite imagery.

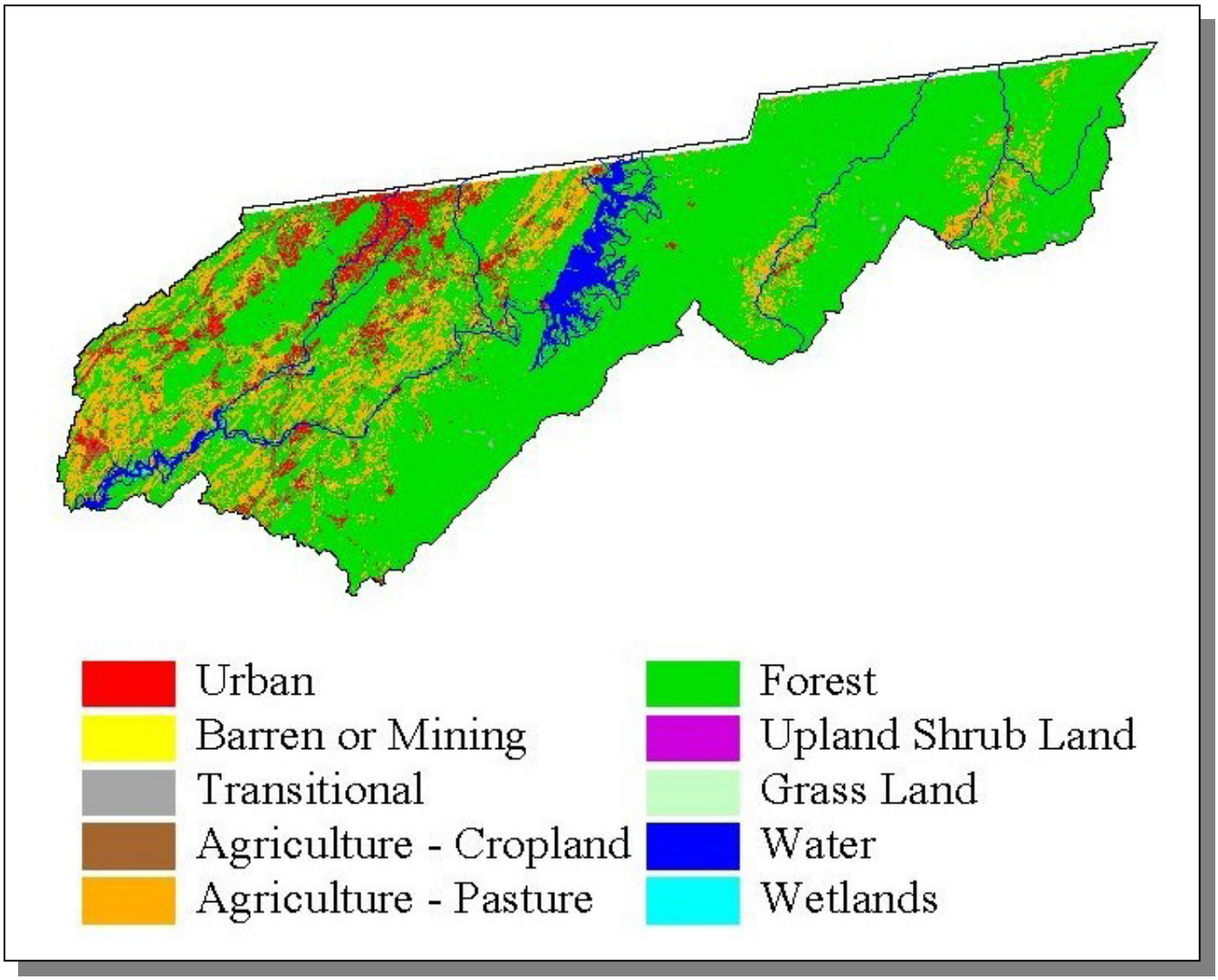

Figure 2-6. Illustration of Select Land Cover/Land Use Data from MRLC Satellite Imagery.

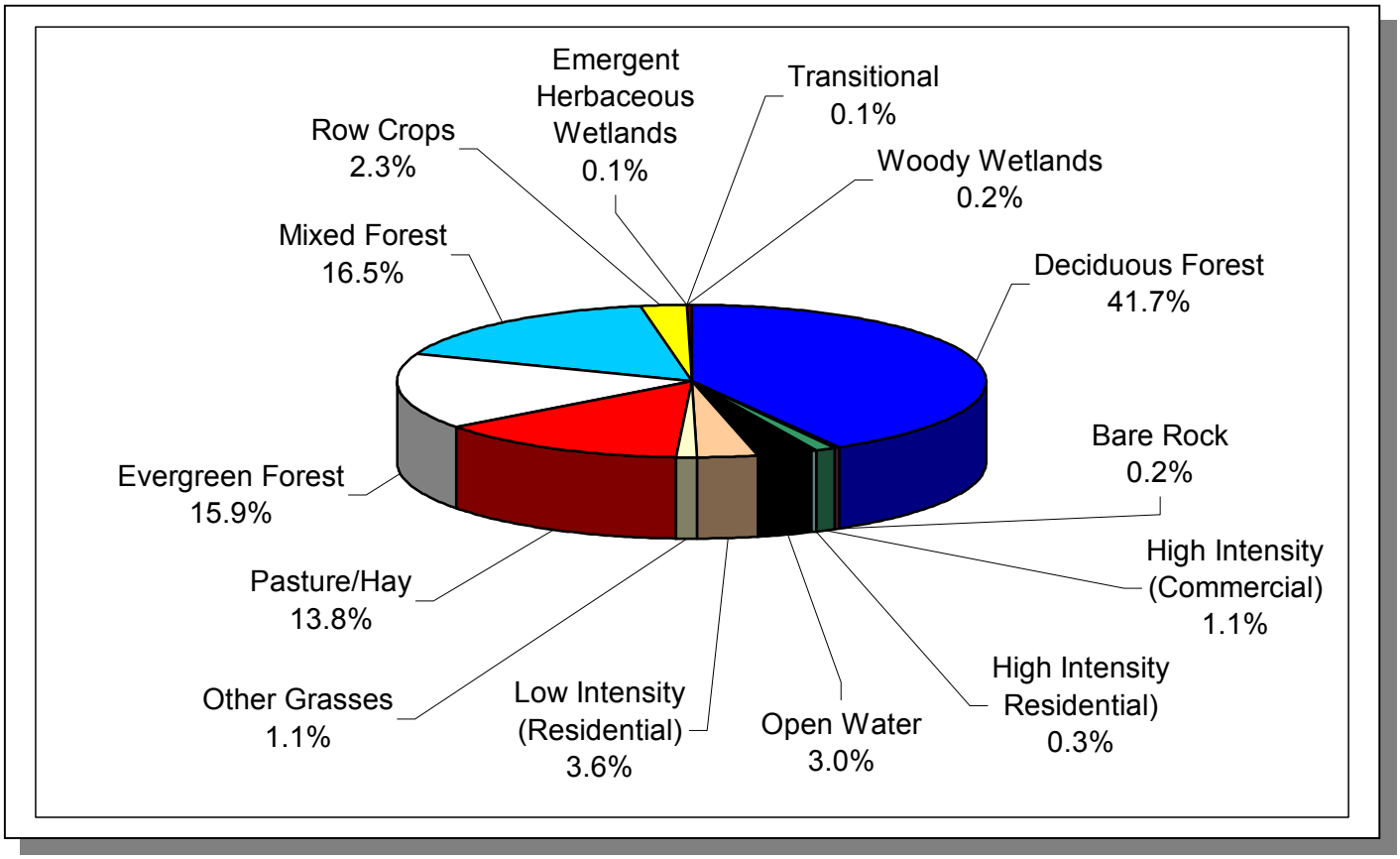

Figure 2-7. Land Use Distribution in the Group 2 Portion of the Tennessee Portion of the South Fork Holston River Watershed. *More information is provided in SF Holston-Appendix II.*

2.5. ECOREGIONS AND REFERENCE STREAMS. Ecoregions are defined as relatively homogeneous areas of similar geography, topography, climate and soils that support similar plant and animal life. Ecoregions serve as a spatial framework for the assessment, management, and monitoring of ecosystems and ecosystem components. Ecoregion studies include the selection of regional stream reference sites, identifying high quality waters, and developing ecoregion-specific chemical and biological water quality criteria.

There are eight Level III Ecoregions and twenty-five Level IV subecoregions in Tennessee. The Group 2 portion of the Tennessee portion of the South Fork Holston River Watershed lies within 2 Level III ecoregions (Blue Ridge Mountains and Ridge and Valley) and contains 6 Level IV subecoregions (Griffen, Omernik, Azavedo):

- The Southern Igneous Ridges and Mountains (66d) occur in Tennessee's northeastern Blue Ridge near the North Carolina border, primarily on Precambrian-age igneous and high-grade metamorphic rocks. The typical crystalline rock types include granite, gneiss, schist, and metavolcanics, covered by well-drained, acidic brown loamy soils. Elevations of this rough, dissected region range from 2000-6200 feet, with Roan Mountain reaching 6286 feet. Although there are a few small areas of pasture and apple orchards, the region is mostly forested; Appalachian oak and northern hardwoods forests predominate.

- The Southern Sedimentary Ridges (66e) in Tennessee include some of the westernmost foothill areas of the Blue Ridge Mountains ecoregion, such as the Bean, Starr, Chilhowee, English, Stone, Bald and Iron Mountain areas. Slopes are steep, and elevations are generaly 1000-4500 feet. The rocks are primarily Cambrian-age sedimentary (shale, sandstone, siltstone, quartzite, conglomerate), although some lower stream reaches occur on limestone. Soils are predominantly friable loams and fine sandy loams with variable amounts of sandstone rock fragments, and support mostly oak and oak-pine forests.

- Limestone Valleys and Coves (66f) are small but distinct lowland areas of the Blue Ridge, with elevations mostly between 1500 and 2500 feet. About 450 million years ago, older Blue Ridge rocks to the east were forced up and over younger rocks to the west. In places, the Precambrian rocks have eroded through to Cambrian or Ordovician-age limestones, as seen especially in isolated, deep cove areas that are surrounded by steep mountains. The main areas of limestone include the Mountain City lowland area and Shady Valley in the north; and Wear Cove, Tuckaleechee Cove, and Cades Cove of the Great Smoky Mountains in the south. Hay and pasture, with some tobacco patches on small farms, are typical land uses.

- The Southern Limestone/Dolomite Valleys and Low Rolling Hills (67f) form a heterogeneous region composed predominantly of limestone and cherty dolomite. Landforms are mostly low rolling ridges and valleys, and the soils vary in their productivity. Landcover includes intensive agriculture, urban and industrial, or areas of thick forest. White oak forests, bottomland oak forests,

and sycamore-ash-elm riparian forests are the common forest types, and grassland barrens intermixed with cedar-pine glades also occur here.

- The Southern Shale Valleys (67g) consist of lowlands, rolling valleys, and slopes and hilly areas that are dominated by shale materials. The northern areas are associated with Ordovician-age calcareous shale, and the well-drained soils are often slightly acid to neutral. In the south, the shale valleys are associated with Cambrian-age shales that contain some narrow bands of limestone, but the soiils tend to be strongly acid. Small farms and rural residences subdivide the land. The steeper slopes are used for pasture of have reverted to brush and forested land, while small fields of hay, corn, tobacco, and garden crops are grown on the foot slopes and bottom land.

- The Southern Dissected Ridges and Knobs (67i) contain more crenulated, broken, or hummocky ridges, compared to the smoother, more sharply pointed sandstone ridges of Ecoregion 67h. Although shale is common, there is a mixture and interbedding of geologic materials. The ridges on the east side of Tennessee's Ridge and Valley tend to be associated with the Ordovician-age Sevier shale, Athens shale, and Holston and Lenoir limestones. These can include calcareous shale, limestone, siltstone, sandstone, and conglomerate. In the central and western part of Ecoregion 67, the shale ridges are associated with the Cambrian-age Rome Formation: shale and siltstone with beds of sandstone. Chestnut oak forests and pine forests are typical for the higher elevations of the ridges, with areas of white aok, mixed mesophytic forest, and tulip poplar on the lower slopes, knobs, and draws.

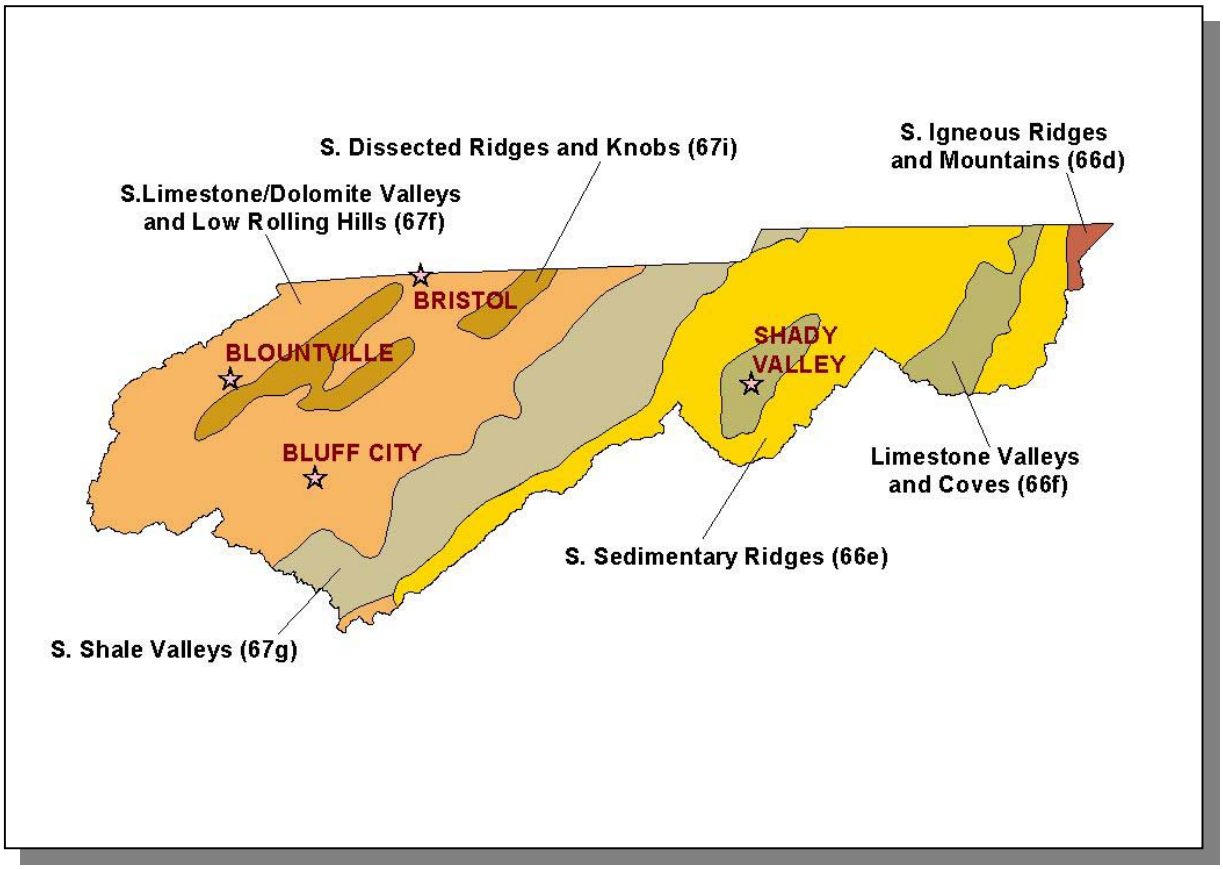

Figure 2-8. Level IV Ecoregions in the Group 2 Portion of the Tennessee Portion of the South Fork Holston River Watershed. *Locations of Blountville, Bluff City, Bristol, and Shady Valley are shown for reference.*

Each Level IV Ecoregion has at least one reference stream associated with it. A reference stream represents a least impacted condition and may not be representative of a pristine condition.

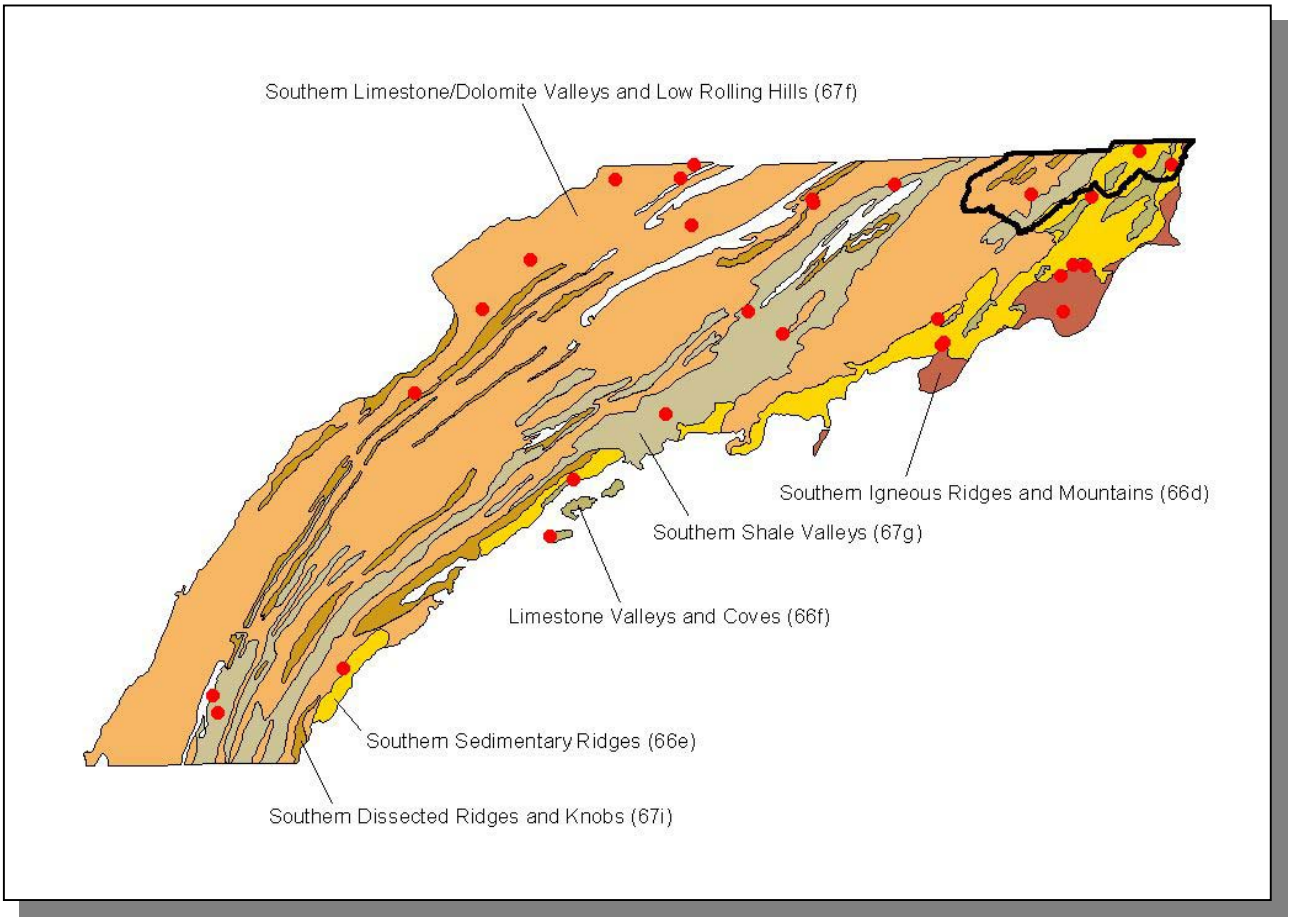

Figure 2-9. Ecoregion Monitoring Sites in the Blue Ridge Mountains (66) and Ridge and Valley (67) Ecoregions. *More information is provided in SF Holston-Appendix II.*

2.6. NATURAL RESOURCES.

2.6.A. Designated State Natural Areas. The Natural Areas Program was established in 1971 with the passage of the Natural Areas Preservation Act. The Group 2 portion of the Tennessee portion of the South Fork Holston River Watershed has one Designated State Natural Area:

Morril's Cave, 30 acres of land that includes an undisturbed cave with formations and 8-10 miles of passages.

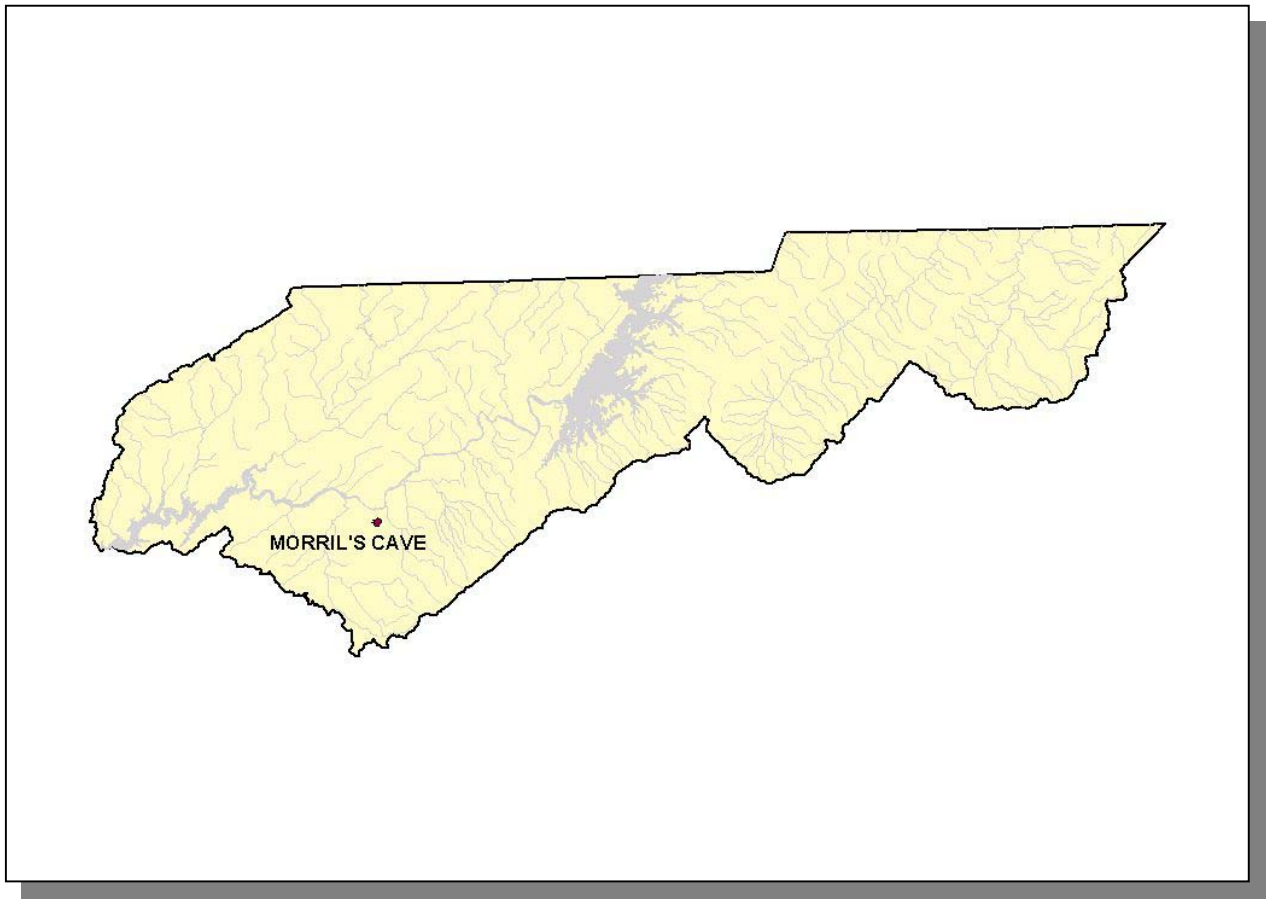

Figure 2-10. There is One Designated State Natural Area in the Group 2 Portion of the Tennessee Portion of the South Fork Holston River Watershed.

2.6.B. Rare Plants and Animals. The Heritage Program in the TDEC Division of Natural Heritage maintains a database of rare species that is shared by partners at The Nature Conservancy, Tennessee Wildlife Resources Agency, the US Fish and Wildlife Service, and the Tennessee Valley Authority. The information is used to: 1) track the occurrence of rare species in order to accomplish the goals of site conservation planning and protection of biological diversity, 2) identify the need for, and status of, recovery plans, and 3) conduct environmental reviews in compliance with the federal Endangered Species Act.

GROUPING	NUMBER OF RARE SPECIES
Crustaceans	0
Insects	1
Mussels	3
Snails	2
Amphibians	0
Birds	6
Fish	4
Mammals	4
Reptiles	1
Plants	59
Total	**80**

Table 2-3. There are 80 Rare Plant and Animal Species in the Tennessee Portion of the South Fork Holston River Watershed.

In the Tennessee Portion of the South Fork Holston River Watershed, there are four rare fish species, three rare mussel species, and two rare snail species.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Cyprinella monacha	Spotfin chub	LT	T
Etheostoma percnurum	Duskytail darter	LE	E
Percina burtoni	Blotchside darter	MC	D
Percina macrocephala	Longhead darter		T
Epioblasma florentina walkeri	Tan riffleshell	LE	E
Pegias fabula	Little-wing pearlymussel	LE	E
Quadrula intermedia	Cumberland monkeyface	LE	E
Helicodiscus notius specus	A Landsnail		
Io fluvialis	Spiny riversnail		

Table 2-4. Rare Aquatic Species in the Tennessee Portion of the South Fork Holston River Watershed. *Federal Status: LE, Listed Endangered by the U.S. Fish and Wildlife Service, LT, Listed Threatened by the U.S. Fish and Wildlife Service, MC, Management Concern for the U.S. Fish and Wildlife Service. State Status: E, Listed Endangered by the Tennessee Wildlife Resources Agency; D, Deemed in Need of Management by the Tennessee Wildlife Resources Agency, T, Listed Threatened by the Tennessee Wildlife Resources Agency. More information may be found at http://www.state.tn.us/environment/nh/tnanimal.html.*

2.6.C. Wetlands. The Division of Natural Heritage maintains a database of wetland records in Tennessee. These records are a compilation of field data from wetland sites inventoried by various state and federal agencies. Maintaining this database is part of Tennessee's Wetland Strategy, which is described at http://www.state.tn.us/environment/epo/wetlands/strategy.zip.

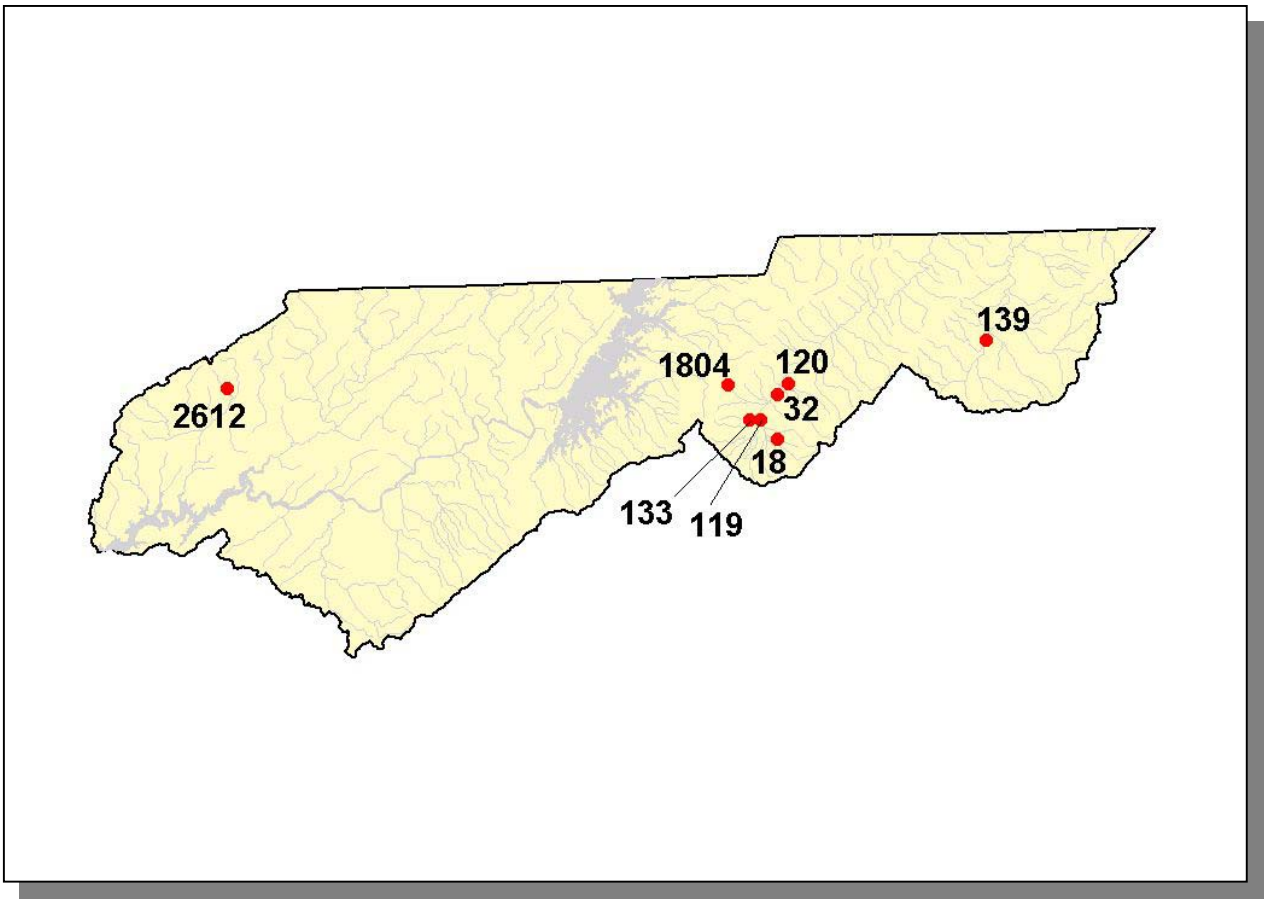

Figure 2-11. Location of Wetland Sites in TDEC Division of Natural Heritage Database in the Group 2 Portion of the Tennessee Portion of the South Fork Holston River Watershed. This map represents an incomplete inventory and should not be considered a dependable indicator of the presence of wetlands in the watershed*. More information is provided in SF Holston-Appendix II.*

2.7. CULTURAL RESOURCES.

2.7.A. Interpretive Areas. Some sites representative of the cultural heritage are under state or federal protection:

- Appalachian Caverns, giant chambers and formations in Blountville
- America's First Frontier Heritage Tourism Area, a historic district that includes the home of President Andrew Johnson
- Little Oak Recreation Area, part of Cherokee National Forests, with trails near South Holston Lake.
- Warrior's Path State Park, located on Patrick Henry Reservoir

In addition, many local interpretive areas are common, most notably, Steele Creek Park and Nature Center in Bristol.

2.7.B. Wildlife Management Area. The Cherokee National Forest is jointly managed by the Tennessee Wildlife Resources Agency and the U.S. Forest Service. At 630,000 acres, it is the largest tract of public land in the state.

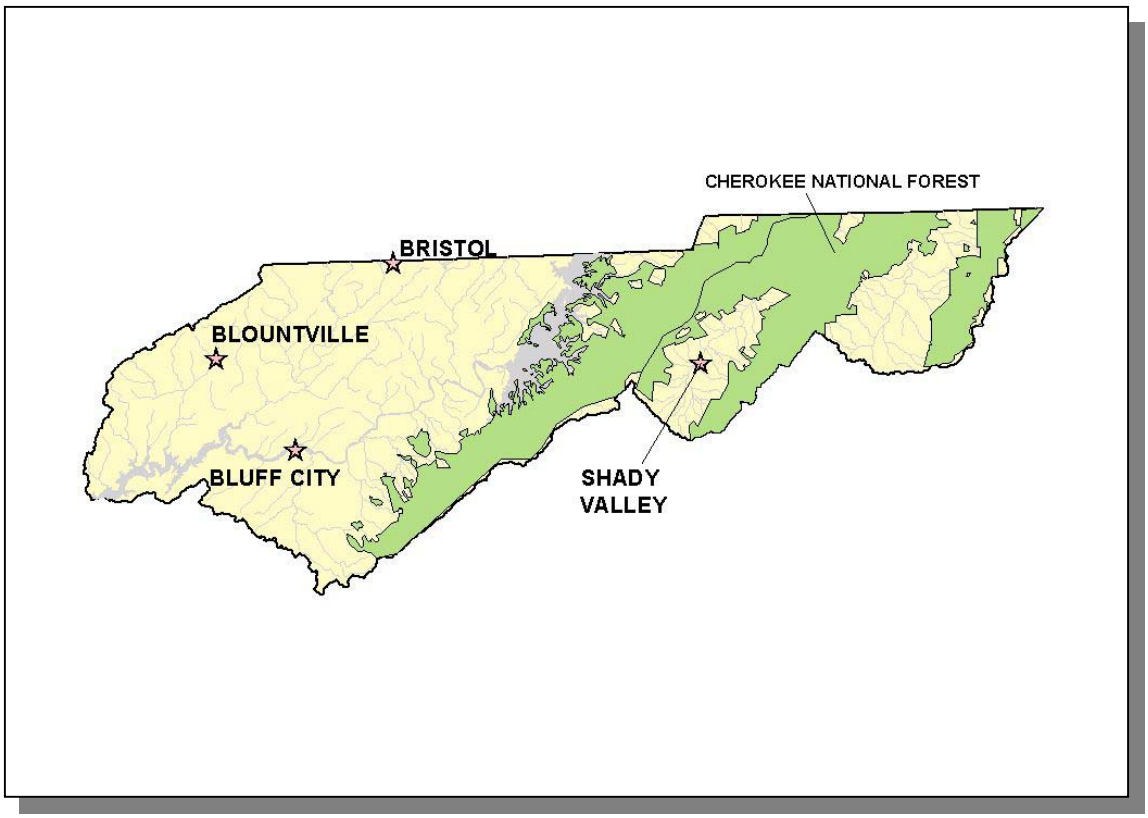

Figure 2-12. TWRA Manages Cherokee National Forest in the Group 2 Portion of the Tennessee Portion of the South Fork Holston River Watershed. *Locations of Blountville, Bluff City, Bristol, and Shady Valley are shown for reference.*

2.8. Tennessee Rivers Assessment Project. The Tennessee Rivers Assessment is part of a national program operating under the guidance of the National Park Service's Rivers and Trails Conservation Assistance Program. The Assessment is an inventory of river resources, and should not be confused with "Assessment" as defined by the Environmental Protection Agency. A more complete description can be found in the Tennessee Rivers Assessment Summary Report, which is available from the Department of Environment and Conservation and on the web at:

http://www.state.tn.us/environment/wpc/publications/riv/

STREAM	NSQ	RB	RF		STREAM	NSQ	RB	RF
Baker Creek	4				Morrell Creek	3		
Beaver Creek	3				Muddy Creek	3		
Beaverdam Creek	1		1		Nicely Branch SF Holston River			1
Indian Creek	3				South Fork Holston River	3,4	2	
Laural Creek	2		1		Steele Creek	4		

Table 2-5. Stream Scoring from the Tennessee Rivers Assessment Project.

Categories: NSQ, Natural and Scenic Qualities
RB, Recreational Boating
RF, Recreational Fishing

Scores: 1. Statewide or greater Significance; Excellent Fishery
2. Regional Significance; Good Fishery
3. Local Significance; Fair Fishery
4. Not a significant Resource; Not Assessed